

Supplementary Materials: Co-Exposure with an Invasive Seaweed Exudate Increases Toxicity of Polyamide Microplastics in the Marine Mussel *Mytilus galloprovincialis*

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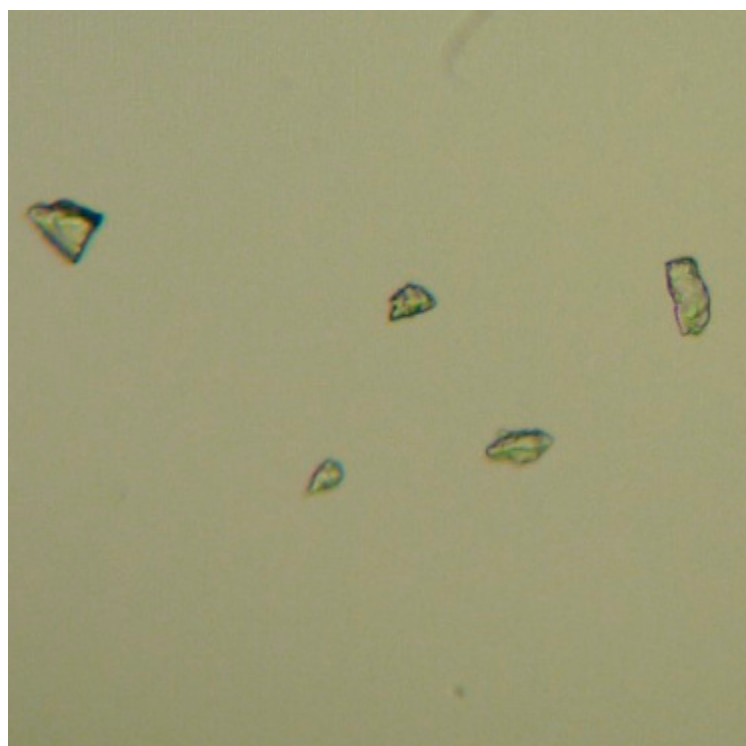


Figure S1. Irregularly shaped polyamide microplastics (PA-MPs). Images taken at 10x magnification (Zeiss Primo Star light microscope, Jena, Germany).

Table S1. Two-way ANOVA analysis results on oxidative stress-related biomarker responses in *Mytilus galloprovincialis* gills with *Asparagopsis armata* exudate and PA-MPs exposures as factors.

| Biomarker | Factor | df | F | <i>p</i> | % of Total Variation |
|-----------|-------------|-------|-------|--------------|----------------------|
| CAT | Exudate | 1, 24 | 1.594 | 0.219 | 4.993 |
| | PA-MPs | 1, 24 | 5.839 | 0.024 | 18.300 |
| | Interaction | 1, 24 | 0.481 | 0.495 | 1.506 |
| GST | Exudate | 1, 24 | 0.658 | 0.425 | 2.669 |
| | PA-MPs | 1, 24 | 0.007 | 0.935 | 0.028 |
| | Interaction | 1, 24 | 0.001 | 0.935 | 0.006 |
| tGSH | Exudate | 1, 24 | 0.001 | 0.979 | 0.002 |
| | PA-MPs | 1, 24 | 6.688 | 0.016 | 18.910 |
| | Interaction | 1, 24 | 4.677 | 0.041 | 13.230 |
| PC | Exudate | 1, 24 | 3.038 | 0.094 | 8.943 |
| | PA-MPs | 1, 24 | 2.558 | 0.123 | 7.528 |
| | Interaction | 1, 24 | 4.380 | 0.047 | 12.890 |
| LPO | Exudate | 1, 24 | 0.261 | 0.614 | 0.967 |

| | | | | | |
|------|-------------|-------|--------|-------|--------|
| | PA-MPs | 1, 24 | 0.010 | 0.923 | 0.035 |
| | Interaction | 1, 24 | 2.707 | 0.113 | 10.030 |
| | Exudate | 1, 24 | 0.007 | 0.932 | 0.029 |
| AChE | PA-MPs | 1, 24 | <0.001 | 0.993 | <0.001 |
| | Interaction | 1, 24 | 1.997 | 0.170 | 7.680 |

Bold denotes statistical significance ($p < 0.05$).

Table S2. Results for two-way ANOVA analysis on biochemical biomarkers responses in the digestive gland of *M. galloprovincialis* with *A. armata* exudate exposure and water temperature as factors.

| Biomarker | Factor | df | F | <i>p</i> | % of Total Variation |
|-----------|-------------|-------|--------|--------------|----------------------|
| CAT | Exudate | 1, 24 | 0.095 | 0.761 | 0.331 |
| | PA-MPs | 1, 24 | 0.007 | 0.935 | 0.024 |
| | Interaction | 1, 24 | 4.475 | 0.045 | 15.660 |
| GST | Exudate | 1, 24 | 0.601 | 0.446 | 2.399 |
| | PA-MPs | 1, 24 | 0.001 | 0.978 | 0.003 |
| | Interaction | 1, 24 | 1.507 | 0.232 | 6.017 |
| tGSH | Exudate | 1, 24 | 0.268 | 0.598 | 1.023 |
| | PA-MPs | 1, 24 | 3.368 | 0.079 | 12.040 |
| | Interaction | 1, 24 | 0.306 | 0.585 | 1.094 |
| PC | Exudate | 1, 24 | 2.451 | 0.131 | 6.403 |
| | PA-MPs | 1, 24 | 11.814 | 0.002 | 30.870 |
| | Interaction | 1, 24 | 0.008 | 0.929 | 0.021 |
| LPO | Exudate | 1, 24 | 1.359 | 0.255 | 5.206 |
| | PA-MPs | 1, 24 | 0.408 | 0.529 | 1.562 |
| | Interaction | 1, 24 | 0.344 | 0.563 | 1.318 |
| AChE | Exudate | 1, 24 | 0.741 | 0.398 | 2.963 |
| | PA-MPs | 1, 24 | <0.001 | 0.990 | <0.001 |
| | Interaction | 1, 24 | 0.270 | 0.608 | 1.080 |

Bold denotes statistical significance ($p < 0.05$).

Table S3. Results for two-way ANOVA analysis on biochemical biomarkers responses in the muscle of *M. galloprovincialis* with *A. armata* exudate exposure and water temperature as factors.

| Biomarker | Factor | df | F | <i>p</i> | % of Total Variation |
|-----------|-------------|-------|--------|--------------|----------------------|
| LPO | Exudate | 1, 24 | 0.016 | 0.899 | 0.068 |
| | PA-MPs | 1, 24 | <0.001 | 0.984 | 0.002 |
| | Interaction | 1, 24 | 0.004 | 0.951 | 0.016 |
| PC | Exudate | 1, 24 | 0.032 | 0.861 | 0.118 |
| | PA-MPs | 1, 24 | 1.702 | 0.201 | 6.388 |
| | Interaction | 1, 24 | 0.913 | 0.349 | 3.426 |
| AChE | Exudate | 1, 24 | 5.552 | 0.027 | 18.420 |
| | PA-MPs | 1, 24 | 0.065 | 0.801 | 0.216 |
| | Interaction | 1, 24 | 0.526 | 0.475 | 1.745 |
| LDH | Exudate | 1, 24 | 0.281 | 0.601 | 1.044 |
| | PA-MPs | 1, 24 | 1.346 | 0.257 | 5.005 |
| | Interaction | 1, 24 | 1.267 | 0.271 | 4.711 |
| Elipids | Exudate | 1, 24 | 0.004 | 0.948 | 0.015 |
| | PA-MPs | 1, 24 | 4.117 | 0.054 | 14.470 |
| | Interaction | 1, 24 | 0.329 | 0.572 | 1.156 |
| Eproteins | Exudate | 1, 24 | 0.347 | 0.561 | 1.200 |
| | PA-MPs | 1, 24 | 2.326 | 0.140 | 8.037 |
| | Interaction | 1, 24 | 2.270 | 0.145 | 7.844 |
| Esugars | Exudate | 1, 24 | 0.707 | 0.409 | 1.834 |
| | PA-MPs | 1, 24 | 0.342 | 0.564 | 0.887 |
| | Interaction | 1, 24 | 14.499 | 0.001 | 37.600 |
| Ea | Exudate | 1, 24 | 0.126 | 0.726 | 0.456 |
| | PA-MPs | 1, 24 | 2.870 | 0.103 | 10.420 |
| | Interaction | 1, 24 | 0.540 | 0.470 | 1.960 |
| ETS | Exudate | 1, 24 | 0.066 | 0.800 | 0.217 |
| | PA-MPs | 1, 24 | 6.162 | 0.020 | 20.300 |
| | Interaction | 1, 24 | 0.128 | 0.723 | 0.423 |
| CEA | Exudate | 1, 24 | 0.511 | 0.482 | 1.577 |
| | PA-MPs | 1, 24 | 6.219 | 0.020 | 19.190 |
| | Interaction | 1, 24 | 1.679 | 0.207 | 5.179 |

Bold denotes statistical significance ($p < 0.05$).